

Kentucky.—Frankfort and Richmond, 9th; Louisville, 8th, 9th.

Louisiana.—Liberty Hill, 17th; Grand Coteau, 12th, 23d, 24th; New Orleans, 15th, 24th; Shreveport, 8th, 17th.

Maryland.—Fort McHenry and Fallston, 9th.

Missouri.—Saint Louis, 8th.

Nebraska.—Red Willow, 4th.

Nevada.—Carson City, 20th.

New Hampshire.—Mount Washington, 10th.

North Carolina.—Weldon, and Chapel Hill, 4th; Brevard, Statesville, and Lincolnton, 9th; Wilmington, 4th, 5th, 16th; Kitty Hawk and Cape Lookout, 5th; Smithville and Portsmouth, 6th; Fort Macon, 4th, 5th; Hatteras, 4th, 5th, 15th; New River Inlet, 4th, 6th, 16th; Wash Woods, 14th, 16th.

Ohio.—College Hill, 8th, North Lewisburg, Portsmouth, and Columbus, 9th; Cincinnati, 8th, 9th.

Oregon.—Portland, 3d; East Portland, 10th.

Pennsylvania.—Fallsington, 9th.

South Carolina.—Charleston, 5th; Pacolet, 9th; Aiken, 4th, 5th; Stateburg, 4th, 5th, 9th.

Tennessee.—Milan and Chattanooga, 9th; Memphis and Nashville, 8th, 9th.

Texas.—Cleburne and Huntsville, 23d; Galveston, 24th; Palestine, 8th; Indianola, 11th; Rio Grande City, 7th; Brownsville, 20th.

Virginia.—Dale Enterprise, 4th; Norfolk, 16th.

West Virginia.—Helvetia, 9th.

In connection with the thunder-storms of February, the following notes have been reported:

Mr. J. T. Campbell, of Rockville, Indiana, reports the following: "at 7 p. m., on the 6th, I saw the most brilliant flash of lightning I ever observed, even in the summer time; at the time of the flash there was a mist in the air which obscured most of the stars."

Vevay, Switzerland County, Indiana: at 10 p. m., on the 8th, a thunder storm of great violence occurred, each flash of lightning being followed quickly by heavy detonations; another thunder-storm of considerable violence occurred during the morning of the 9th.

Charleston, Coles County, Illinois: a dwelling, eighteen miles north of this place, was struck by lightning and badly damaged during the thunder-storm of the 8th.

Clarksville, Tennessee, 9th: the rain storm during the morning was accompanied by thunder and lightning such as is very unusual in February. Numerous trees in this vicinity were struck by lightning; a stable near by was also struck and burned.

Steelville, Crawford County, Missouri, 14th: an unusual electrical phenomenon occurred at the Palmer lead mines, twenty-five miles southeast of this place, during the night of the 8-9th. A vivid flash of lightning, accompanied by a deafening peal of thunder, struck a large oak tree which was shattered to pieces, the fragments flying in every direction to a distance of three hundred yards; a piece of the tree, weighing three hundred pounds, was hurled through the roof of a barn which stood near; the roots of the tree were also torn out of the ground.

Fort Grant, Arizona, 22d: rain began at 11.10 a. m. being quite heavy at intervals; from 1.25 to 2.15 p. m. it was accompanied by intense sheet lightning and terrific thunder; the lightning arrester in the signal office was damaged.

ELECTRICAL PHENOMENA.

The observer on the summit of Mount Washington, on the 3d, reported the following: "Upon touching the stove, or one person touching another, electric sparks were emitted and perceptible shocks felt."

Fort Benton, Montana, 16th: for about four hours during the afternoon telegraphic communication was interrupted by atmospheric electricity.

Fort Assinaboine, Montana, 16th: from 3.35 to 4.20 p. m., telegraphic communication was suspended on account of atmospheric electricity.

Fort Maginnis, Montana, 16th: during the prevalence of a high westerly wind from 12.40 to 9.30 p. m., all metallic objects, when touched, emitted electric sparks. A match was ignited by being placed between the contact points of a telegraph key.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos were observed in the various states and territories as follows:

Arizona.—9th, 12th.

Arkansas.—4th, 7th, 12th, 14th, 17th, 18th.

California.—1st, 4th, 5th, 6th, 8th, 11th, 13th, 17th, 18th, 19th, 25th, 26th.

Colorado.—13th, 21st.

Connecticut.—24th.

Dakota.—7th, 9th, 11th, 12th, 14th.

Florida.—8th, 16th, 20th, 27th.

Illinois.—10th, 11th, 14th, 16th, 19th, 28th.

Indiana.—5th, 11th, 12th, 13th, 18th, 20th.

Iowa.—8th to 11th, 14th to 23d, 26th.

Kansas.—12th, 13th, 14th, 18th, 20th, 28th.

Kentucky.—23d.

Louisiana.—7th.

Maine.—9th.

Michigan.—5th, 8th to 11th, 19th, 28th.

Minnesota.—4th, 9th to 13th, 15th, 16th, 18th, 19th.

Nebraska.—9th, 10th, 12th, 18th, 19th, 27th, 28th.

Nevada.—20th.

New Hampshire.—9th.

New York.—3d, 7th, 18th, 21st to 25th.

North Carolina.—5th, 8th, 12th, 15th, 19th.

Ohio.—1st, 3d, 10th to 23d, 25th, 27th, 28th.

Oregon.—24th.

Pennsylvania.—8th, 16th, 21st, 28th.

South Carolina.—21st, 25th.

Texas.—1st, 7th, 26th, 27th.

Virginia.—4th, 5th, 8th, 12th, 19th, 23d.

Wisconsin.—10th, 11th, 13th, 17th, 28th.

Wyoming.—16th, 20th, 21st, 27th.

Observers at La Crosse, Wisconsin, and Chester, Minnesota, report having observed on the 11th solar halos, mock suns, &c., of unusual appearance.

LUNAR HALOS.

Lunar halos were observed in the various states and territories as follows:

Alabama.—20th.

Arizona.—19th, 20th, 21st, 28th.

Arkansas.—20th.

California.—19th, 21st, 23d to 27th.

Colorado.—21st, 27th.

Connecticut.—24th.

Dakota.—22d, 24th, 26th, 27th.

Delaware.—27th.

Florida.—1st, 20th, 21st, 23d, 24th, 28th.

Georgia.—25th.

Illinois.—23d, 28th.

Indiana.—23d, 26th, 27th, 28th.

Iowa.—19th, 24th, 26th, 28th.

Kansas.—4th, 18th, 22d, 27th, 28th.

Kentucky.—23d, 28th.

Louisiana.—5th, 20th.

Maryland.—28th.

Massachusetts.—19th, 20th, 22d, 24th, 26th, 27th, 28th.

Michigan.—1st, 10th, 22d, 27th.

Montana.—2d, 17th.

Nebraska.—27th, 28th.

Nevada.—23d.

New Hampshire.—24th, 28th.

New York.—1st, 21st, 22d, 24th, 25th, 27th, 28th.

North Carolina.—5th, 23d, 25th, 26th.

Ohio.—2d, 18th, 19th, 20th, 22d, 23d, 25th, 28th.

Oregon.—21st, 26th, 27th, 28th.

Pennsylvania.—3d, 12th, 14th, 19th, 25th, 28th.

Rhode Island.—24th.

South Carolina.—11th, 16th, 17th, 21st, 25th.

Tennessee.—18th.

Texas.—19th, 21st, 24th to 27th.

Vermont.—24th.

Virginia.—4th, 19th, 25th, 26th, 28th.

Washington Territory.—20th, 22d, 25th, 27th, 28th.

Wisconsin.—23d, 27th.

Wyoming.—d, 20th, 22d, 27th.

The phases of the moon during February were: last quarter, 6th, 5.31 p. m.; new moon, 14th, 9.15 p. m.; first quarter, 22d, 5.25 a. m.; full moon, 28th, 10.54 p. m.; apogee, 9th, 7.24 p. m.; perigee, 25th, 6.24 p. m.

MIRAGE.

Fort Grant, Arizona: a mirage was observed at 10.30 a. m. of the 4th, showing the reflection of a lake fourteen miles west of station. On the 14th, at 9.30 a. m., a mirage was observed in the south, representing the forms of mountains inverted. Mirage was also seen on the 16th in the southeast, showing the reflection of a lake.

Mirage was observed at other stations as follows:

Webster, Dakota, 14th.

Vermilion, Dakota, 11th, 12th, 18th, 21st, 25th, 26th.

Salina, Kansas, 15th, 16th.

Northport, Michigan, 23d.

Marquette, Michigan, 24th.

Marquette, Nebraska, 26th.

Genoa, Nebraska, 26th, 27th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and sixty-three stations show 4,523 observations to have been made, of which three were reported doubtful; of the remainder, 4,520, there were 3,940, or 87.2 per cent., followed by the expected weather.

SUN SPOTS.

Professor David P. Todd, director of the Lawrence Observatory, Amherst, Massachusetts, furnishes the following record of sun spots for February, 1885:

Date— Feb., 1885.	No. of new		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
	Gr's	Spots	Gr's	Spots	Gr's	Spots	Gr's	Spots	
2, 3 p. m.	0	0	0	0	0	0	5	25†	Most of the spots small. Do. Do.
5, 10 a. m.	0	0	0	0	0	0	5	70†	
6, 10 a. m.	0	0	0	0	0	0	5	60†	
7, 4 p. m.	2	10†	2	3†	0	0	5	60†	
10, 5 p. m.	2	15†	0	0	0	0	4	45†	
11, 10 a. m.	1	2	1	5†	1	2	5	45†	
13, 10 a. m.	0	0	0	0	0	0	5	45†	
15, 12 m.	1	25†	0	0	1	5	6	70†	
17, 1 p. m.	0	0	0	0	0	0	6	70†	
18, 5 p. m.	1	5	0	0	1	5	7	75†	
20, 1 p. m.	2	15†	0	10†	2	15†	9	75†	Most of the spots small.
21, 5 p. m.	1	5†	1	15†	0	0	9	60†	
23, 4 p. m.	1	2	0	0	1	2	5	35†	
24, 3 p. m.	1	1	1	2	1	1	5	30†	
25, 5 p. m.	1	1	0	0	1	1	5	20†	
28, 3 p. m.	2	55†	0	0	0	0	3	65†	

Facule were seen at the time of every observation. †Approximated.

EARTHQUAKES.

Professor C. G. Rockwood, jr., of Princeton, New Jersey, has forwarded the following report:

February 2, at 7.10 a. m., a light earthquake was felt at Wytheville, Wythe county, Virginia, with a sound like the rumbling of distant thunder, which seemed to come from the northwest. Apparently it was confined to the immediate vicinity of Wytheville. Inquiries by letter to adjoining counties brought replies from Marion, Smyth county, on the southwest; Rural Retreat, Wythe county, and Independence, Grayson county, on the south; Hillsville, Carroll county, on the southeast; Pulaski station, Pulaski county, on the northeast; and Bland Court House, Bland county, on the north, at none of which places was it felt.

The "Charleston News and Courier" of February 14th, 1885, contains the following:

CITY OF MEXICO, via GALVESTON, February 12th.—At Tequi Sixtlan (?) in the state of Oaxaca, a sharp earthquake was experienced last Sunday (8th). It lasted two seconds. Another more violent shock was felt at Niltpec, also in the state of Oaxaca, several buildings swaying and one house falling.

The following are extracts from "Nature" of February 19th and 26th:

Shocks of earthquake continue to be felt in the south of Spain. A telegram from Granada on the 12th, stated that slight shocks continued to be felt at Alhama, and on that day there was a shock at Terre del Campo, near Jaen. There were also shocks in the evening of the 14th, at Granada and Velez Malaga.

The last earthquakes in southern Spain (February 15th) were incident with slight subterranean motions in Algiers and in Savoy. The valley of Isère and Chamberg principally felt them.

METEORS.

San Diego, California, 4th: a meteor of great brilliancy, from which there was a continuous flow of sparks, was observed at 7.30 p. m. Its direction was from a point near the zenith northeastward through a path 20° in length.

Wickenburg, Arizona, 18th: a meteor was observed at 12.21 a. m.; it was apparently from six to seven inches in diameter and moved toward the northwestern horizon, the duration of its flight being from five to eight seconds. The light from the meteor was sufficiently bright to enable a person to read fine print by it. Just before its disappearance it exploded into two parts of about equal size, and for two or three minutes after the explosion a loud report was heard, resembling the sound of a distant cannon. During the passage of the meteor it threw off brilliant sparks and at its disappearance left a cloud which soon faded away.

Prescott, Arizona, 18th: a brilliant meteor passed across the sky from southeast to northwest at 12.15 a. m.

The following is from the "Washington Post" of February 24, 1885:

VICTORIA, B. C., February 23.—A meteor passed over this city this morning about 9 o'clock. It was of enormous size and appeared like a mass of molten iron. The noise caused by its passage was like that of escaping steam. Smoke and flames were thrown off by the meteor. It was seen to descend into the sea, a cloud of spray and steam marking the spot.

The following is from the "New York Maritime Register" of March 18, 1885:

The bark "Innerwick" (Br.) from Yokohama, at Victoria, B. C., March 2, reported that at midnight of February 24, in N. 37°, E. 70° 50' (probably W. 127°) the wind was blowing heavily from sse.; at 5 a. m. the sky changed to a fiery red, and all at once a large mass of fire appeared over the vessel and fell into the sea some fifty yards to leeward, with a hissing sound, causing the bark to quiver from stem to stern. A towering mass of white foam was then seen rapidly approaching the vessel. The bark was struck flat aback, and before there was time to touch a brace the sails filled again, and the roaring white sea could be seen passing away ahead. Another sheet of flame then ran down the mizzenmast, from the rigging of which poured myriads of sparks, and for twenty minutes the strange redness of the sky remained.

Lead Hill, Boone county, Arkansas: at 6.15 p. m., on the 27th, a bright meteor was observed.

Nashville, Tennessee, 27th: a very bright meteor was observed at 6.58 p. m.; it passed from a point 40° above the northern horizon in a southwesterly course and disappeared beneath the western horizon; it left a track of yellowish color which remained visible forty-five seconds.

Chattanooga, Tennessee, 27th: a brilliant meteor is reported to have passed over this place in a direction from east to west shortly before 7 p. m. on the 27th.

The following is an extract from the February, 1885, report of the Tennessee Weather Service:

Meteors were observed on the 19th at Quarter and on the 27th at Sunbright, Grief, Riddleton, Florence Station, Nashville, Ashwood, Kingston Springs, Hohenwald, McKenzie and Milan. The meteor of the 27th was one of the most brilliant and remarkable that has appeared in this part of the country for many years. Of this phenomenon the following notes were made: The observer at Sunbright reports, a large, very brilliant meteor appeared in the zenith at 7 p. m., traveling westward with a train of about 18° to 20° in length, and disappeared below the horizon. The body was yellowish in color. The observer at Grief reports a very bright meteor at 7 p. m., moving from east to west, seemingly as large as the moon. It disappeared